



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
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ARLINGTON, TEXAS 76011-4125

May 13, 2011

Mr. Adam C. Heflin, Senior Vice  
President and Chief Nuclear Officer  
Union Electric Company  
P.O. Box 620  
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT – NRC TEMPORARY INSTRUCTION 2515/183  
INSPECTION REPORT 2011008

Dear Mr. Heflin:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Callaway Plant using Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on May 4, 2011, with Mr. L. Graessle, Director, Operations Support, and other members of your staff.

The objective of this inspection was to assess the adequacy of actions taken at the Callaway Plant in response to the Fukushima Daiichi Nuclear Station fuel damage event. The results from this inspection, along with the results from similar inspections at other operating commercial nuclear plants in the United States, will be used to evaluate the United States nuclear industry's readiness to respond to a similar event. These results will also help the NRC to determine if additional regulatory actions are warranted.

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report. You are not required to respond to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Union Electric Company

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Sincerely,

*/RA/*

Geoffrey B. Miller, Chief  
Project Branch B  
Division of Reactor Projects

Docket No. 50-483  
License No. NPF-30

Enclosure: Inspection Report 2011008  
w/Attachment: Supplemental Information

cc: w/Enclosure:

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000483

License: NPF-30

Report: 05000483/2011008

Licensee: Union Electric Company

Facility: Callaway Plant

Location: Junction Highway CC and Highway O  
Fulton, MO

Dates: March 23 through April 29, 2011

Inspectors: D. Dumbacher, Senior Resident Inspector  
J. Groom, Resident Inspector  
L. Willoughby, Senior Project Engineer

Approved By: Geoffrey B. Miller, Chief, Project Branch B  
Division of Reactor Projects

## **SUMMARY OF FINDINGS**

IR 05000483/2011008, 03/23/2011 – 04/29/2011; Callaway Plant Temporary Instruction 2515/183 - Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event.

This report covers an announced temporary instruction inspection. The inspection was conducted by resident and Region IV inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

## **INSPECTION SCOPE**

The intent of the temporary instruction is to be a high-level look at the industry's preparedness for events that may exceed the design basis for a plant. The focus of the temporary instruction was on (1) assessing the licensee's capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats; (2) assessing the licensee's capability to mitigate station blackout conditions; (3) assessing the licensee's capability to mitigate internal and external flooding events required by station design; and (4) assessing the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. If necessary, a more specific followup inspection will be performed at a later date.

## **INSPECTION RESULTS**

The following table documents the NRC inspection at Callaway Plant, performed in accordance with Temporary Instruction 2515/183. The numbering system in the table corresponds to the inspection items in the temporary instruction.

**03.01 Assess the licensee's capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats, committed to as part of NRC Security Order Section B.5.b issued February 25, 2002, and severe accident management guidelines and as required by Title 10 CFR 50.54(hh). Use Inspection Procedure 71111.05T, "Fire Protection (Triennial)," Section 02.03 and 03.03 as a guideline. If Inspection Procedure 71111.05T was recently performed at the facility the inspector should review the inspection results and findings to identify any other potential areas of inspection. Particular emphasis should be placed on strategies related to the spent fuel pool. The inspection should include, but not be limited to, an assessment of any licensee actions to:**

Licensee Action	Describe what the licensee did to test or inspect equipment.
<p>a. Verify through test or inspection that equipment is available and functional. Active equipment shall be tested and passive equipment shall be walked down and inspected. It is not expected that permanently installed equipment that is tested under an existing regulatory testing program be retested.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>The licensee performed inspections of equipment required to mitigate conditions that result from beyond design basis events. This equipment is committed to in licensing documents and severe accident management guidelines. Walkdowns were performed on the Emergency Coordinator Supplement Guidelines, Severe Accident Management Guidelines and the Extensive Damage Mitigation Guidelines. The licensee performed reviews to ensure that the equipment called for in these procedures was appropriately staged, the equipment was available and functional, and that the active equipment was tested satisfactory per plant procedures.</p>
	<p>Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).</p>
	<p>The inspectors performed inspection to verify that equipment required to mitigate conditions that result from beyond design basis events is available and functional. The equipment selected by the inspectors included permanently installed and alternative mitigating strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under such circumstances. Included in the inspectors' review were equipment specified in the following procedures:</p> <ul style="list-style-type: none"> <li>• SAG-1, Inject into the Steam Generators, Revision 5;</li> <li>• SAG-3, Inject into the Reactor Coolant System, Revision 5;</li> </ul>

	<ul style="list-style-type: none"> <li>• SAG-7, Reduce Containment Hydrogen, Revision 3;</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment B, Filling Refueling Water Storage Tank from Firewater – Low Flow, Revision 8;</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment R, Starting Turbine-Driven Auxiliary Feedwater Pump on Loss of AC and DC Power, Revision 8; and</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment KK, Filling the Spent Fuel Pool, Internal Strategy, Revision 8</li> </ul> <p>The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment problems that could impact the capability of mitigating systems and entered them into the corrective action program with the appropriate significance characterization.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>The licensee identified one discrepancy in that the manifold and high pressure hose required for execution of SCG-2, "Depressurize the RCS," was not available on site. Despite this discrepancy, the licensee verified that the procedure could be completed by an alternate means. This issue was entered into the licensee's corrective action program as Callaway Action Request 201102199. At the close of the inspection, the procedurally required hose and manifold had been ordered by the licensee.</p> <p>The inspectors verified that the required equipment was available and functional.</p>



Licensee Action	Describe the licensee's actions to verify that procedures are in place and can be executed (e.g., walkdowns, demonstrations, tests, etc.)
<p>b. Verify through walkdowns or demonstration that procedures to implement the strategies associated with B.5.b and 10 CFR 50.54(hh) are in place and are executable. Licensees may choose not to connect or operate permanently installed equipment during this verification.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	<p>The licensee performed walkdowns to demonstrate that procedures to implement the strategies associated with B.5.b and 10 CFR 50.54(hh) are in place and executable. The scope of the licensee's reviews included those procedures specified in the Emergency Coordinator Supplement Guidelines. The procedures were reviewed to ensure that the applicable steps were adequately specified and feasible.</p>
	<p>Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.</p>
	<p>The inspectors reviewed the licensee's preparedness to handle large fires or explosions by reviewing mitigating strategies. Additionally, the inspectors reviewed the adequacy and feasibility of the licensee's severe accident management guidelines. As part of their review, the inspectors verified that the necessary procedures are being maintained and are adequate, and that station personnel are knowledgeable and can implement the procedures. The inspectors verified that the procedures are feasible in light of the design of the equipment including any plant modifications. Samples selected by the inspectors were based on the complexity and risk significance of the strategies. Specific strategies reviewed included the following:</p> <ul style="list-style-type: none"> <li>• SAG-1, Inject into the Steam Generators, Revision 5;</li> <li>• SAG-3, Inject into the Reactor Coolant System, Revision 5;</li> <li>• SAG-7, Reduce Containment Hydrogen, Revision 3;</li> <li>• SAG-8, Flood Containment, Revision 4;</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment B, Filling Refueling Water Storage Tank from Firewater – Low Flow, Revision 8;</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment R, Starting Turbine-Drive Auxiliary Feedwater Pump on Loss of AC and DC Power, Revision 8; and</li> <li>• Emergency Coordinator Supplemental Guideline, Attachment X, Manually Depressurize Steam Generators, Revision 8.</li> </ul>

	<p>Discuss general results including corrective actions by licensee.</p> <p>The inspectors identified that B.5.b and 10 CFR 50.54(hh) procedures were in place and executable. The inspectors did note that the technical basis for using gravity drain of the refueling water storage tank to flood containment referenced in SAG-8 was not available. The licensee entered this discrepancy into their corrective action program as Callaway Action Request 201102691.</p> <p>The licensee did identify several potential procedural enhancements. These potential enhancements were entered into the licensee's corrective action program as Callaway Action Requests 201102191, 201102192, 201102193, 201102195, 201102200, 201102230, 201102267, and 201102198.</p>
<p>Licensee Action</p>	<p>Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.</p>
<p>c. Verify the training and qualifications of operators and the support staff needed to implement the procedures and work instructions are current for activities related to B.5.b and severe accident management guidelines as required by 10 CFR 50.54 (hh).</p>	<p>The licensee verified that the qualifications of personnel who implement strategies associated with B.5.b and 10 CFR 50.54(hh) as well as severe accident management guidelines are current. The licensee's review extended to operations, engineering, fire brigade team members, security officers and emergency response organization members.</p> <p>Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff.</p> <p>The inspectors performed a sampling of training and qualifications records for licensee staff needed to implement the procedures and work instructions related to B.5.b and 10 CFR 50.54(hh). The inspectors also reviewed training records associated with severe accident management guidelines. Finally, the inspectors reviewed specific training modules to verify that the content of the material adequately described the mitigating strategy.</p>

	Discuss general results including corrective actions by licensee.
	The inspectors verified that the licensee staff did receive qualification training associated with B.5.b and 10 CFR 50.54(hh) as well as severe accident management guidelines. The inspectors also verified that a continuing training program existed. The inspectors did not find any discrepancies during a review of individual training records.
Licensee Action	Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.
<p>d. Verify that any applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of these events.</p> <p>This review should be done for a reasonable sample of mitigating strategies/equipment.</p>	The licensee reviewed contracts with off-site support agencies (fire departments, hospitals, etc.) and verified that the existing contracts are current and capable of being implemented.
	For a sample of mitigating strategies involving contracts or agreements with offsite entities, describe inspector actions to confirm agreements and contracts are in place and current (e.g., confirm that offsite fire assistance agreement is in place and current).
	The inspectors performed a review of the contracts with off-site support agencies including local fire departments, local law enforcement, and local medical facilities. The inspectors' review was focused on ensuring that the contracts in place were current and capable of being implemented.
	Discuss general results including corrective actions by licensee.
	The inspectors verified that agreements and contracts associated with B.5.b and 10 CFR 50.54(hh) were in place and capable of being implemented.

Licensee Action	Document the corrective action report number and briefly summarize problems noted by the licensee that have significant potential to prevent the success of any existing mitigating strategy.
e. Review any open corrective action documents to assess problems with mitigating strategy implementation identified by the licensee. Assess the impact of the problem on the mitigating capability and the remaining capability that is not impacted.	<p>Callaway Action Request 201102691, a tracking document for TI-183 issues, captured the following items resulting from both licensee and NRC inspector reviews:</p> <ul style="list-style-type: none"> <li>• Installed emergency lighting is rated for only 8 hours;</li> <li>• The plant process computers data acquisition equipment (multiplexers) had only one nonsafety related power feed, a single point of vulnerability;</li> <li>• Need for additional training was identified on how to manually operate auxiliary feedwater discharge flow control valves. A training request was generated to address familiarity with such equipment.</li> </ul> <p>The inspectors assessed the impact of these corrective action items as enhancements that could slightly increase the response capability of the operators during a B.5.b or 10 CFR 50.54(hh) event.</p>

**03.02 Assess the licensee's capability to mitigate station blackout conditions, as required by 10 CFR 50.63, "Loss of All Alternating Current Power," and station design, is functional and valid. Refer to Temporary Instruction 2515/120, "Inspection of Implementation of Station Blackout Rule Multi-Plant Action Item A-22," as a guideline. It is not intended that Temporary Instruction 2515/120 be completely reinspected. The inspection should include, but not be limited to, an assessment of any licensee actions to:**

Licensee Action	Describe the licensee's actions to verify the adequacy of equipment needed to mitigate a station blackout event.
a. Verify through walkdowns and inspection that all	The licensee verified the capability of equipment to mitigate station blackout conditions is functional, properly tested, and maintained. The licensee's walkdowns focused on permanently staged equipment specified in emergency operating procedures involving a complete loss of AC power.

<p>required materials are adequate and properly staged, tested, and maintained.</p>	<p>Describe inspector actions to verify equipment is available and useable.</p> <p>The inspectors performed inspection to verify that equipment required to mitigate station blackout conditions is available and functional. The equipment selected by the inspectors included permanently installed and staged equipment required by 10 CFR 50.63 and described in the licensee Updated Final Safety Analysis Report. Additionally, the inspectors reviewed supplemental electrical equipment that could function to terminate a station blackout condition. Specific systems reviewed by the inspectors include:</p> <ul style="list-style-type: none"> <li>• Turbine-driven auxiliary feedwater system;</li> <li>• Condensate storage and transfer system;</li> <li>• DC electrical distribution system; and</li> <li>• Alternate emergency power supply diesel system</li> </ul> <p>The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment problems that could impact the capability of mitigating systems and entered them into the corrective action program with the appropriate significance characterization.</p> <p>Discuss general results including corrective actions by licensee.</p> <p>The inspectors verified that all required materials and equipment required to mitigate a station blackout condition were properly staged, tested, and maintained.</p>
<p>Licensee Action</p>	<p>Describe the licensee's actions to verify the capability to mitigate a station blackout event.</p>
<p>b. Demonstrate through walkdowns that procedures for</p>	<p>The licensee performed a walkdown of procedures for response needed to respond to a station blackout event to ensure the procedures are executable. The procedures were reviewed to ensure that the applicable steps were adequately specified and feasible. Included in the licensee's review</p>

response to a station blackout are executable.	<p>were verifications that components were adequately labeled and accessible, operators were knowledgeable and could execute the procedure and that the procedural steps served to execute the mitigating strategy.</p>
	<p>Describe inspector actions to assess whether procedures were in place and could be used as intended.</p>
	<p>The inspectors reviewed the licensee's preparedness to mitigate a station blackout condition. As part of their review, the inspectors walked through the procedure to ensure they were feasible and technically accurate. A review of supporting calculations was performed for select procedures. Individual procedure samples were selected by the inspectors based on the complexity and risk significance.</p> <p>Additionally, the inspectors observed the licensee conduct a routine licensee emergency drill involving a station blackout situation on March 30, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the attachment.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>The inspectors verified that the procedures needed to respond to a station blackout event are technically accurate, executable and up to date. Additionally, the inspectors verified that station personnel are knowledgeable and can implement the procedures.</p>

**03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design. Refer to Inspection Procedure 71111.01, "Adverse Weather Protection," Section 02.04, "Evaluate Readiness to Cope with External Flooding," as a guideline. The inspection should include, but not be limited to, an assessment of any licensee actions to verify through walkdowns and inspections that all required materials and equipment are adequate and properly staged. These walkdowns and inspections shall include verification that accessible doors, barriers, and penetration seals are functional.**

Licensee Action	Describe the licensee's actions to verify the capability to mitigate existing design basis flooding events.
a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.	<p>The licensee performed walkdowns and inspections that all required materials and equipment necessary to mitigate the effects of internal or external flowing are adequate and properly staged. These walkdowns and inspections included verification that accessible doors, barriers, and penetration seals are functional. Additionally, the licensee performed calculation reviews to ensure that the potential sources of internal and external flooding were properly identified and that the plant design was adequate to protect critical components from flooding.</p>
	<p>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</p>
	<p>For internal flooding, the inspectors reviewed the Final Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. As part of their review, the inspectors reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems. Specific areas were walked down to verify that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also inspected the areas listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific areas reviewed by the inspectors included:</p> <ul style="list-style-type: none"> <li>• Room 3101, Essential service water pipe chase;</li> </ul>

	<ul style="list-style-type: none"> <li>• Rooms 5201 and 5203, Emergency diesel generator rooms; and</li> <li>• Room 1310, Residual heat removal heat exchanger room train A.</li> </ul> <p>Additionally, the inspectors reviewed the Final Safety Analysis Report and related flood analysis documents to identify those areas that could reasonably be affected by external flooding. Due to the design and geographic location of Callaway, the only credible external flooding event is one caused by heavy rains. The inspectors reviewed the design of structures, systems and components and their ability to cope with a maximum precipitation event. The review included a walkdown of building roofs to ensure that drain paths were available and that the drain system has adequate protection (screens/covers) to prevent debris from disabling the system.</p>
	<p>Discuss general results including corrective actions by licensee.</p>
	<p>Generally all required materials for mitigating flooding events were adequate and properly maintained. Callaway flooding analysis documents do not rely on or assume available any flood removal equipment.</p> <p>The licensee identified that the fuel building roof drains do not have a recurring preventative maintenance task to verify they are free of debris. Upon discovery, the licensee inspected the roof drains and found them to be functional. A preventive maintenance task to inspect the drains every three months was implemented consistent with the other drains on safety related buildings. This issue was entered into the licensee's corrective action program as Callaway Action Request 201102411. The licensee also identified several degraded penetration seals as well as several seals with no preventative maintenance task to verify their condition. These issues were entered into the licensee's corrective action program as Callaway Action Requests 200906746 and 201102735.</p> <p>The inspectors noted that the licensee relies on sump annunciator response procedures which predominately result in directing an operator to investigate the cause of the high sump level. These annunciator procedures do not provide detailed guidance on how to isolate breaks in piping systems or where flood removal pumps are located.</p> <p>The inspectors noted that the potential source of flooding identified for Rooms 5201 and 5203, emergency diesel generator rooms, was nonconservative in that it:</p>



	<ul style="list-style-type: none"> <li>• Used a pressure lower than the system design pressure for the postulated break in the essential service water system.</li> <li>• Credited installed sump pumps when a credible single source of power loss would have affected both pumps. A reanalysis confirmed that the resulting flood height with no sump pumps was acceptable.</li> </ul> <p>These issues were entered into the corrective action program as Callaway Action Request 201102691.</p> <p>The inspectors also identified that the licensee had not updated the internal flooding analysis for Room 3101, essential service water pipe chase, following a planned modification to the essential service water supply and return headers. Specifically, the licensee's installation of high density polyethylene piping created a potential flooding source in excess of that currently analyzed in the Callaway licensing basis. This issue was entered into the licensee's corrective action program as Callaway Action Request 201102957. The inspectors plan to conduct further inspection on this item; the results of the inspection will be documented in the second quarter resident inspection report.</p>
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<b>03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. Assess the licensee's development of any new mitigating strategies for identified vulnerabilities (e.g., entered it in to the corrective action program and any immediate actions taken). As a minimum, the licensee should have performed walkdowns and inspections of important equipment (permanent and temporary) such as storage tanks, plant water intake structures, and fire and flood response equipment; and developed mitigating strategies to cope with the loss of that important function. Use Inspection Procedure 71111.21, "Component Design Basis Inspection," Appendix 3, "Component Walkdown Considerations," as a guideline to assess the thoroughness of the licensee's walkdowns and inspections.</b>	
Licensee Action	Describe the licensee's actions to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies.

<p>a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.</p>	<p>The licensee performed walkdowns and inspections of installed fire and flood mitigation response equipment. This included fire water storage tanks, water intake structures, fire pumps, piping and valves. The licensee reviews also included procedures for using alternative water sources and the portable diesel-driven fire pumper truck. The licensee reviews also included assessment of offsite assistance and fire fighting communication methods since none of the permanently installed fire response equipment is seismically designed or qualified.</p>
	<p>Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.</p>
	<p>The inspectors walked down the fire response materials, and verified they were adequate, properly staged, tested, and maintained with a qualified fire brigade leader. A multi-fire scenario due to a seismic event was discussed. This resulted in the need to use the developed licensee strategy to use the fire fighting pumper truck.</p>
	<p>Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.</p>
	<p>The inspectors concluded the licensee reviews of the fire water response systems were extensive and thorough. The inspectors concluded that mitigating fire equipment was mostly in place and adequately maintained.</p> <p>The inspectors identified that since Callaway relies on operations personnel to make up the fire brigade, fighting more than one fire would initially be very difficult due to limited staffing. The licensee initiated Callaway Action Request 201103437 to evaluate staffing.</p> <p>Additionally the inspectors identified that the licensee had not assessed the capability of the installed fire response equipment (halon) for the essential switchgear rooms. The licensee determined that this equipment does not need to be evaluated based on an industry frequently asked question. The licensee has trained its operators that if halon is not available to use a water source for electrical switchgear fires. The halon system is a threaded pipe system and is not seismically qualified. The introduction of fire fighting water into the switchgear room is not likely to</p>

	<p>flood the room but could carry over an unanalyzed amount of water into the remaining essential switchgear room as the doors isolating the rooms were not flood doors. The licensee initiated Callaway Action Request 201103440 to evaluate the impact of the loss of the halon system.</p> <p>Also, the scenario posed revealed that the fire pumper truck did not have sufficient lengths of suction hose to reach the alternate water sources specified in the licensee procedure. Additional suction hose was located elsewhere in a procedurally unspecified locker after the inspectors' question. The procedure required a strainer for the suction hose that was not on the truck. Callaway Action Request 201103437 also addressed the truck equipment issues.</p>
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### **EXIT MEETING SUMMARY**

The inspectors presented the inspection results to Mr. L. Graessle, Director, Operations Support, and other members of licensee management at the conclusion of the inspection on May 4, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

F. Bianco, Assistant Operations Manager - Support  
R. Eickelman, Operations Supervisor  
L. Eitel, Supervising Engineer, Systems Engineering  
J. Fortman, Supervising Engineer, Major Projects  
S. Hogan, Assistant Manager, Protective Services - Emergency Preparedness  
S. Petzel, Engineer, Regulatory Affairs  
J. Picard, Licensed Reactor Operator  
N. Turner, Consulting Emergency Response Coordinator

### LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

#### **03.01 Assess the licensee's capability to mitigate conditions that result from beyond design basis events**

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
CA-1	RCS Injection to Recover Core	3
CA-2	Injection Rate for Long Term Decay Heat Removal	2
CA-3	Hydrogen Flammability in Containment	4
CA-4	Volumetric Flow Rate from Vent	2
CA-5	Containment Water Level and Volume	4
CA-6	RWST Gravity Drain	3
CA-7	Hydrogen Impact when Depressurizing Containment	3
DFC	Diagnostic Flow Chart	5
EC Supp Guide	Emergency Coordinator Supplemental Guideline	8
OTO-SK-00003	Extensive Damage Mitigation Guidelines (EDMGS)	4
SACRG-1	Severe Accident Control Room Guideline	6
SAG-1	Inject into the Steam Generators	5
SAG-2	Depressurize the RCS	4

SAG-3	Inject into the RCS	5
SAG-7	Reduce Containment Hydrogen	3
SAG-8	Flood Containment	4
SCG-3	Control Hydrogen Flammability	4
SCST	Severe Challenge Status Tree	3

#### DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
E-23EP02A(Q)	Schematic Diagram Accumulator Isolation Valves	3
E-23EP09(Q)	Schematic Diagram Safety Injection Accumulator Vent. Valves	2
OOA-BB-00003	Refuel Level Indications	11

#### CALLAWAY ACTION REQUESTS

201102047      201102691

#### JOBS

10504470/500

### **03.02 Assess the licensee's capability to mitigate station blackout (SBO) conditions**

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ECA-0.0	Loss of All AC Power	13
BD-ECA-0.0	Loss of All AC Power	6
EOP Addendum 21	Local Start of Emergency DGS	1
EOP Addendum 23	Local CST Emergency Fill	3
EOP Addendum 39	Alternate Emergency Power Supply	0

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Calculation BO-04	Condensate Storage Tank Inventory for a Four Hour Station Blackout.	3
Calculation NK-05	Class 1E Battery Capacity	7

**03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OTN-LF-00001	Auxiliary Building Sump Level High	2
OTA-RK-00024	Miscellaneous Sumps Level High – 94F	4

CALLAWAY ACTION REQUESTS

201007857	201007985	201101853	201102411	201102957
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MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
Calculation FL-10	Flooding of Diesel Building Rooms	0
Calculation XX-49	Maximum Control Building Flood Level for Room 3101	1

**03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EIP-ZZ-00226	Fire Response Procedure for Callaway Plant	14
FPP-ZZ-00012	Fire Pre-Plan Off Site Support Organizations	6
OTO-KC-00001	Fire Response	8
EC Supp Guide	Emergency Coordinator Supplemental Guideline	8

CALLAWAY ACTION REQUESTS

201103437	201103440	201102781	201007857
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JOBS

10512468	09508661	08507234
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MISCELLANEOUS DOCUMENTS

NUMBER

TITLE

DATE

Underwriters Laboratories Certificate of Inspection for  
Fire Pumper Truck

July 14, 1986